

Air Education and Training Command

Sustaining the Combat Capability of America's Air Force



U.S. AIR FORCE

Occupational Survey Report AFSC 2A6X4 Aircraft Fuel Systems

**Mr. Scott Vap
12 Aug 2003**

Integrity - Service - Excellence

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Overview



- Survey background
- Survey results
- Implications and way ahead



Executive Summary



- Heterogeneous job structure with one job cluster identified
- Technical tasks are performed throughout all skill levels
- Career ladder documents well-supported by survey data
- Job satisfaction indicators are very good



Work Performed



- Removes, repairs, inspect, installs, and modifies aircraft fuel systems including integral fuel tanks, bladder cells, and external tanks
- Maintains associated hardware and equipment



Survey Background



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- Last Occupational Survey Report (OSR) – March 2001
- Current survey developed – August - October 2002
 - Sheppard AFB TX (Tech School) (5)
 - Barksdale AFB LA (4)
 - Kirtland AFB NM (4)
 - Travis AFB CA (2)
 - McChord AFB WA (3)
 - Fairchild AFB WA (3)
 - Mountain Home AFB ID (6)
 - Edwards AFB CA (3)
 - Nellis AFB NV (2)
 - SKT Team Randolph AFB TX (2)





Survey Background



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- Survey initiated to obtain data to:
 - Evaluate current classification and training documents
 - Support promotion test development
- Current survey data collected - January - April 2003
- Components surveyed:
 - Active Duty: 3-, 5-, 7-Skill Levels
 - Guard: 5- and 7-Skill Levels
 - Reserve: 5- and 7-Skill Levels





Current Training Program



- AFSC-awarding course
 - 361 TRS, Sheppard AFB TX
 - J3ABR2A634-001, Aircraft Fuel Systems Apprentice Course, 7 weeks, 2 days
 - 21 Semester hours for CCAF
- Programmed TPR
 - FY02: 77 students
 - FY03: 104 students
- Programmed Elimination Rate
 - FY02: 5%
 - FY03: 7%



Survey Sample Characteristics



	<u>AD</u>	<u>AFRC</u>	<u>ANG</u>	<u>Total</u>
Assigned*	1,816	965	478	3,259
Mailed Out	1,618	904	442	2,964
Sample	831	358	173	1,362
Usable Returns	51%	40%	39%	46%

- Average time in career field for AD: 6 yrs 9 months
- Average TAFMS for AD: 7 yrs 3 months
- Percent of AD in first enlistment: 28%

* Assigned as of Jan 03



Skill & Paygrade Characteristics



Skill-Level Distribution

	Assigned*	Sample
3-Level -	38%	23%
5-Level -	41%	33%
7-Level -	21%	44%

Paygrade Distribution

	Assigned*	Sample
E-1 - E-3 -	32%	23%
E-4 -	17%	19%
E-5 -	27%	24%
E-6 -	14%	21%
E-7 -	9%	12%
E-8 -	**	**

* Assigned as of Jan 03

** Indicates less than 1%



Command Representation



Command	Assigned %*	Sample %
ACC	22	22
AMC	9	11
PACAF	8	8
AETC	6	8
USAFE	5	8
AFMC	3	3
AFSOC	2	1
ANG	30	26
AFRC	15	13

•Assigned as of Jan 03

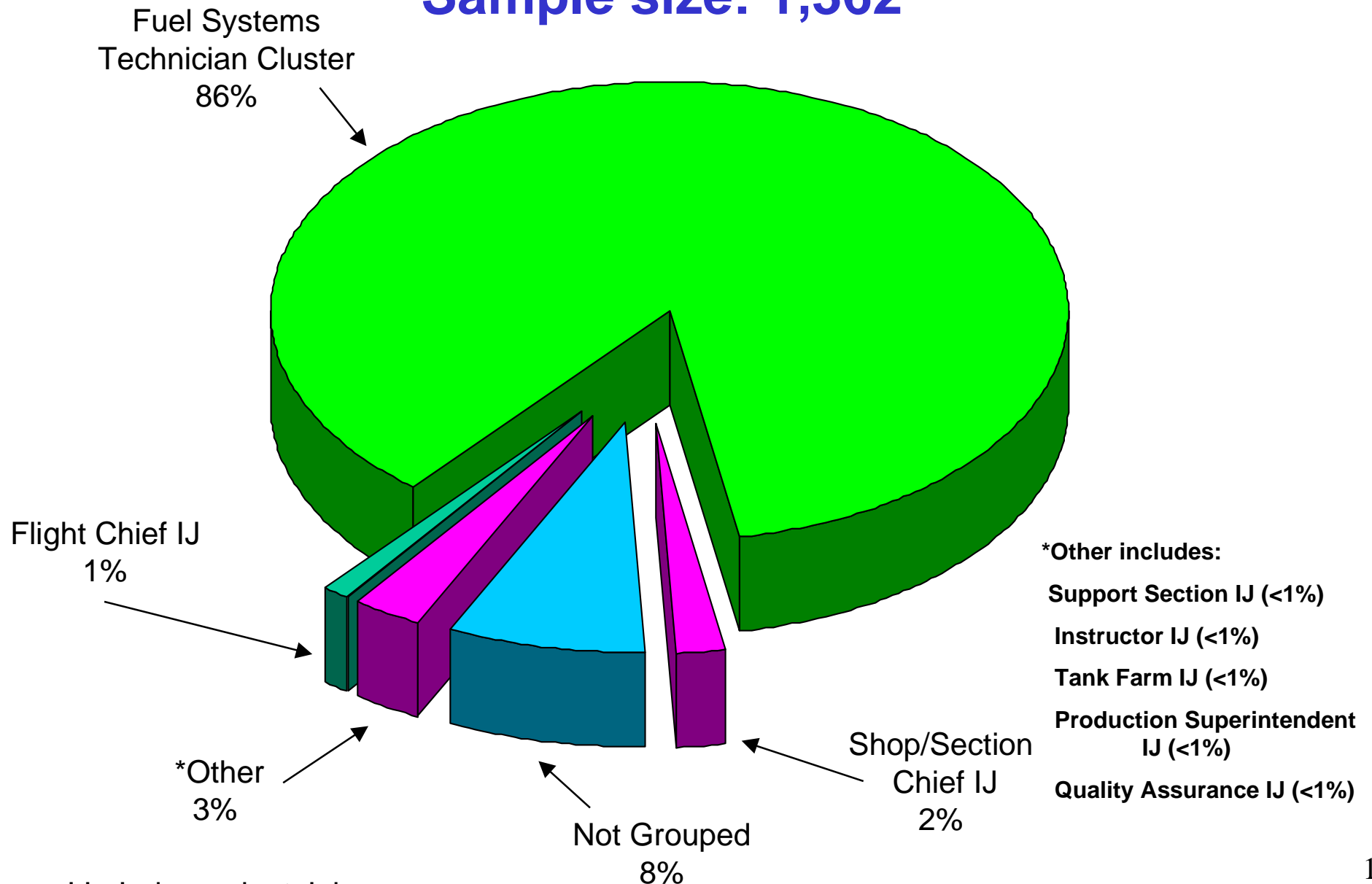


Job Structure



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Sample size: 1,362





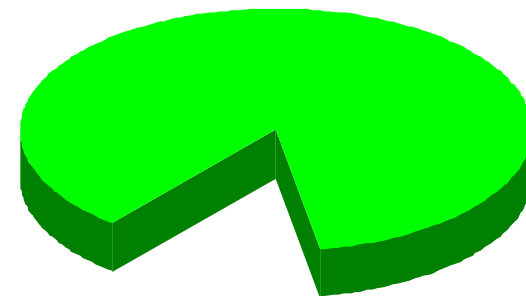
Fuel Systems Technician Cluster (N=1,178)



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- Apply warning tags to aircraft
- Bond or ground equipment, other than aircraft
- Apply electrical power to aircraft
- Ground aircraft or equipment
- Operate hangar doors
- Depuddle fuel tanks or cells
- Rope off fuel system repair areas
- Connect or disconnect Wiggins-type or minimal-type fittings
- Isolate fuel leak points
- Pull circuit breakers

Fuel Systems Technician Job
Entry-Level Job
U-2 Entry-Level Job



86%

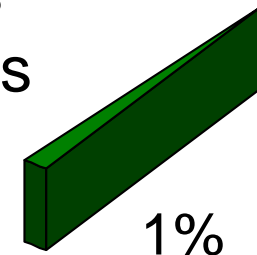
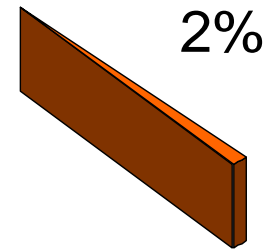


Independent Jobs



AETC

- Shop/Section Chief IJ (N=28)
 - Inventory equipment, tools, parts, or supplies
 - Evaluate serviceability of equipment, tools, parts, or supplies
 - Perform time compliance technical order (TCTO) inspections
- Flight Chief IJ (N=15)
 - Write or indorse military performance reports
 - Write recommendations for awards or decorations
 - Counsel subordinates concerning personal matters
 - Maintain administrative files





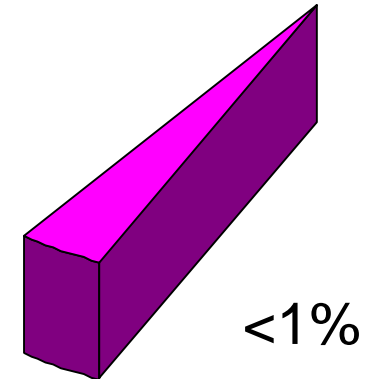
Independent Jobs



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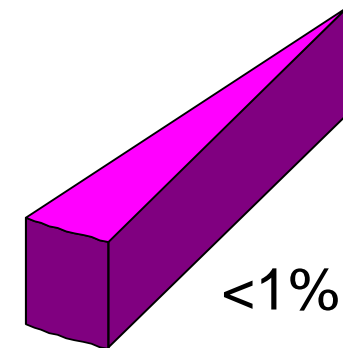
- Support Section IJ (N=7)

- Maintain hydrazine detection equipment
- Maintain hydrazine protective gear or clothing
- Inventory equipment, tools, parts, or supplies



- Instructor IJ (N=6)

- Determine training requirements
- Evaluate training methods or techniques of instructors
- Inspect training materials or aids for operation or suitability
- Develop training programs, plans, or procedures





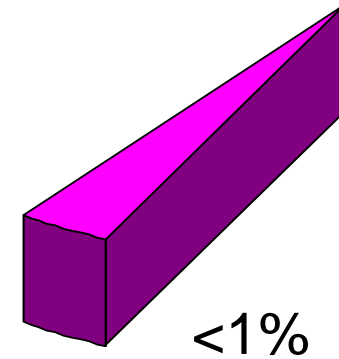
Independent Jobs



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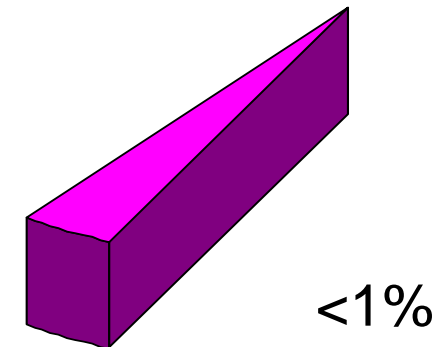
- Tank Farm IJ (N=5)

- Maintain external fuel tank storage areas, such as tank farms
- Inspect external jettisonable fuel tanks
- Inspect training jettisonable fuel tank components
- Issue or receive external fuel tanks



- Production Superintendent IJ (N=6)

- Compile data for records, reports, logs, or trend analyses
- Interpret policies, directives, or procedures for subordinates
- Manage aircraft delayed discrepancies
- Adjust daily maintenance plans to meet operational commitments



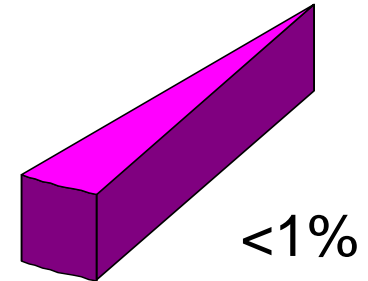


Independent Jobs



AETC

- Quality Assurance IJ (N=5)
 - Evaluate job hazards or compliance with AFOSH program
 - Inspect personnel for wear of safety equipment or clothing
 - Evaluate maintenance or utilization of equipment, tools, parts, supplies, or workspace
 - Evaluate serviceability of equipment, tools, parts, or supplies





Career Ladder Progression



- 3- and 5-skill-level personnel
 - Work in the most technical jobs in the career field
 - Spend most of their time on technical tasks
- 7-skill-level personnel
 - Continue to perform technical tasks
 - However, take on supervisory, training, and administrative duties



Percent Across Specialty Jobs

DAFSC



	DAFSC 2A634 (N=265)	DAFSC 2A654 (N=493)	DAFSC 2A674 (N=604)
Fuel Systems Technician Cluster	87	92	82
Support Section IJ	*	*	1
Instructor IJ	0	*	1
Tank Farm IJ	*	1	0
Shop/Section Chief IJ	0	*	5
Flight Chief IJ	0	0	3
Production Superintendent IJ	0	0	1
Quality Assurance IJ	0	*	1
Not Grouped	12	3	6



Career Ladder Progression

Percent Time Spent on Duties



	DAFSC 2A634 (N=265)	DAFSC 2A654 (N=493)	DAFSC 2A674 (N=604)
Performing Support Activities	14	13	10
Preparing Aircraft for Fuel Systems Maintenance or Tank Entry	16	15	11
Troubleshooting Aircraft Fuel Systems	18	17	14
Inspecting Aircraft Fuel Systems	11	13	13
Removing or Installing Aircraft Fuel Systems Components	14	13	11
Repairing Aircraft Fuel Systems Components	4	3	2
Performing Integral Fuel Tank Repairing Activities	9	9	7
Repairing Aircraft Fuel Cells	3	3	3
Performing Aircraft Fuel Systems Maintenance Management Activities	3	4	7
Performing General Administrative and Technical Order (TO) System Activities	1	1	3
Performing General Supply and Equipment Activities	2	2	3
Performing General Aircraft or CUT Activities	1	1	2
Performing Deployment and Contingency Activities	1	1	2
Performing Training Activities	1	2	4
Performing Management and Supervisory Activities	1	2	8

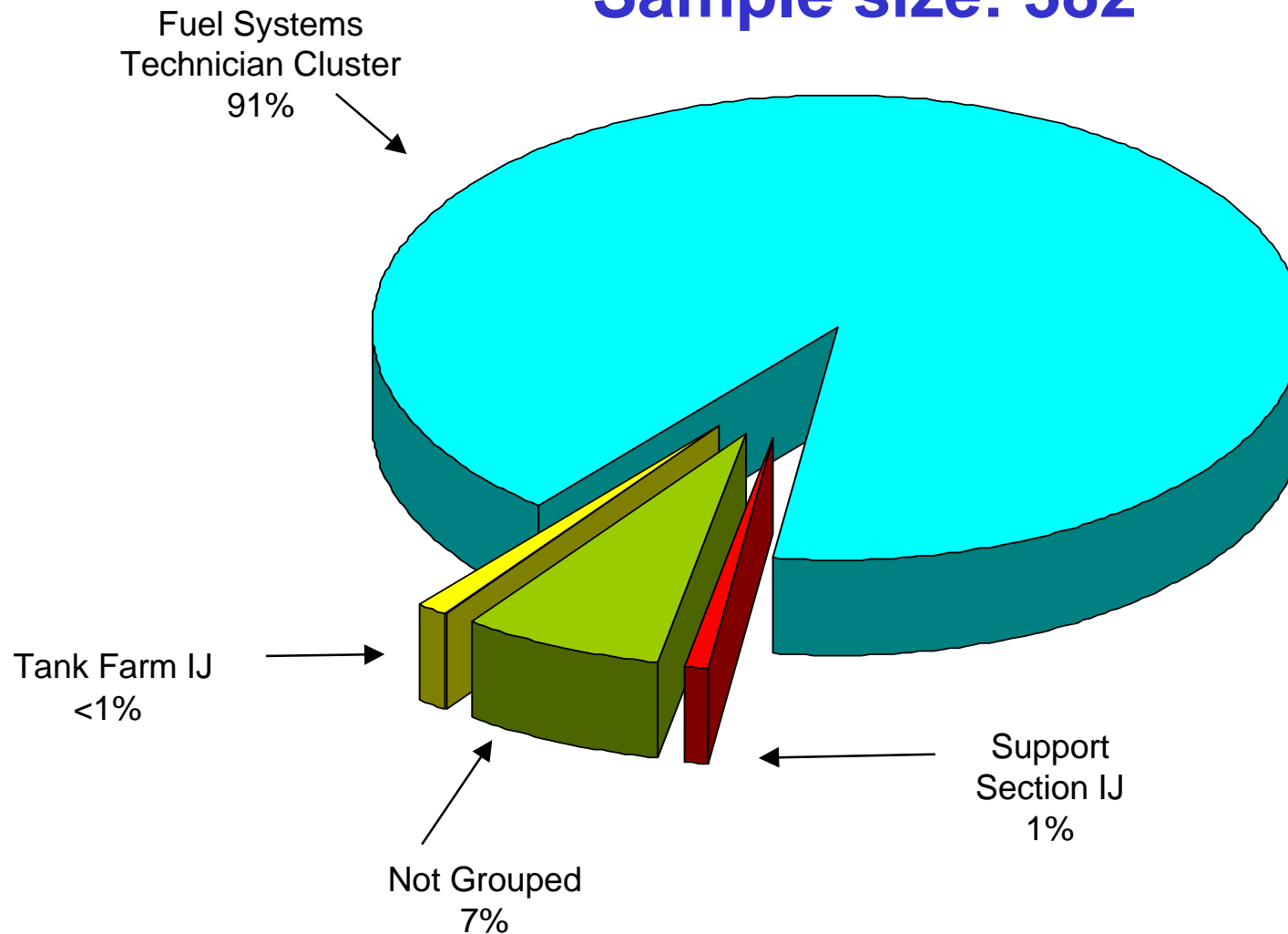


First-Enlistment Job Structure



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Sample size: 382





First-Enlistment Personnel Representative Tasks



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Percent
Members
Performing
(N=382)

Tasks

Bond or ground equipment, other than aircraft	97
Apply warning tags to aircraft	96
Operate hangar doors	95
Apply electrical power to aircraft	94
Ground aircraft or equipment	91
Depuddle fuel tanks or cells	88
Inform fire department of fuel systems maintenance	88
Rope off fuel system repair areas	87
Position fire extinguishers	85
Pull circuit breakers	85
Perform aircraft safe for maintenance procedures	84
Connect or disconnect Wiggins-type, wig-o-flex, or minimal-type fittings	84
Inspect respiratory equipment	83
Set up support equipment for purging activities	83
Remove or install boost pumps	83



First-Enlistment Personnel Tools & Equipment



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Members

Percent

Performing
(N=382)

Equipment

Nonexplosion-proof Aerospace Ground Equipment (AGE) Used/Operated

Air Conditioners, Low Pac	87
Air Conditioners, MC7	74
Maintenance Stands, other than KC-10	61
Light Carts	56

Explosion-proof AGE Used/Operated

Maintenance Stands, such as B-1 or B-4A Stands	91
Browsers	88
Ambient Air Breathing Pumps	75
Rhine Air Low-Pressure Breathing Kits	59

Test Equipment Used/Operated

Multimeters	85
Leak Tracking Devices	76
Combustible and Toxic Gas Indicators	69
Pressure/Vacuum Gauges	68
Combustible Gas Alarms	65
Bonding Meters	61



First-Enlistment Personnel Tools & Equipment (cont.)



Members

Percent

Performing
(N=382)

Equipment

Special Tools or Equipment Used/Operated

Wrenches, Torque

95

Speed Handles

91

Sealant Mixing Machine

79

Adapter Kits, Torque Wrench (Star Fittings)

78

Wrenches, Spanner

77

Removal Tools, Screw, (Johnson Bars)

72

External Drop Lights

67

Kits, Mixer

40

Alignment Tools

35



Specialty Training Standard (STS) Analysis



- STS is generally supported by survey data
 - Five STS items were unsupported
- Some STS items may need proficiency code review
 - Three uncoded STS items matched to JI tasks performed by more than 20 percent of members
- Six technical tasks performed by 20 percent or more of members were not referenced to STS
 - These should be reviewed for possible inclusion in STS



Unsupported STS Elements



Examples

Unit	Learning Objective	Prof Code	Percent Members Performing		Tng Emp	Tsk Dif	ATI
			1st Job	1st Enl			
A2.13.3.1	Hot patch (A2.17 FUEL CELLS)	2b					
Task	H0384. Hot patch bladder fuel cells		10	13	2.58	5.96	7
A2.13.3.2	Cold patch (A2.17 FUEL CELLS)	2b					
Task	H0384. Cold patch bladder fuel cells		12	15	2.60	5.43	7

Mean TE Rating is 2.10, Standard Deviation is 1.46 (HIGH TE= 3.56)
Mean TD Rating is 5.00, Standard Deviation is 1.00 (HIGH TD= 6.00)



Proficiency Codes Requiring Review



AETC

Unit	Learning Objective	Prof Code	Percent Members Performing		Tng Emp	Tsk Dif	ATI
			1st Job	1st Enl			
A2.5.22. Task	Historical Records I0410. Maintain or review aircraft historical records	-	38	44	3.72	5.01	12
A3.1.1. Task	Analytical Aircraft Troubleshooting Theory C0087. Interpret aircraft fuel system schematics	-	60	67	5.30	6.18	18
A3.2.5. Task	Inspect components (A3.2. ENGINE FEED AND CROSSFEED SYSTEMS) D0188. Inspect installed crossfeed system components	-	53	57	3.65	4.85	18

Mean TE Rating is 2.10, Standard Deviation is 1.46 (HIGH TE= 3.56)
Mean TD Rating is 5.00, Standard Deviation is 1.00 (HIGH TD= 6.00)



Tasks not Referenced to STS



Examples

<u>Tasks</u>	<u>Percent Members Performing</u>		<u>Tng</u> <u>Emp</u>	<u>Tsk</u> <u>Dif</u>	<u>ATI</u>
	<u>1st</u> <u>Job</u>	<u>1st</u> <u>Enl</u>			
D0224 Perform phase inspections	39	46	2.93	5.26	15
F0318 Remove or install check valve parts	39	45	2.26	4.32	17
F0320 Remove or install relief valve parts	44	44	2.14	4.44	15
F0334 Test boost pumps	44	44	1.67	4.62	14
F0341 Test fuel level control valves	32	32	1.51	4.92	14

Mean TE Rating is 2.10, Standard Deviation is 1.46 (HIGH TE= 3.56)
Mean TD Rating is 5.00, Standard Deviation is 1.00 (HIGH TD= 6.00)



Plan of Instruction (POI) Analysis



- POI is generally well-supported by survey data
 - Two learning objectives matched to JI tasks performed by less than 30 percent of members
- Tasks not referenced to any POI learning objective should be reviewed for possible inclusion in POI



Unsupported POI Objectives



Examples

<u>Tasks</u>	<u>Percent Members Performing</u>		<u>Tng Emp</u>	<u>Tsk Dif</u>	<u>ATI</u>
	<u>1st Job</u>	<u>1st Enl</u>			
II.2.a. Engine feed and crossfeed systems					
F0315 Rebuild ETAMs	14	15	2.49	5.08	7
F0340 Test ETAMs	13	15	2.19	4.95	7
III.5.c. Ground refuel/defuel system operational check					
B0071 Lower vent ends for purging	27	28	1.67	3.29	1

Mean TE Rating is 2.10, Standard Deviation is 1.46 (HIGH TE= 3.56)
Mean TD Rating is 5.00, Standard Deviation is 1.00 (HIGH TD= 6.00)



Tasks not Referenced to POI



Examples

<u>Tasks</u>	Percent Members <u>Performing</u>		<u>Tng</u> <u>Emp</u>	<u>Tsk</u> <u>Dif</u>	<u>ATI</u>
	1 st	1 st			
	<u>Job</u>	<u>Enl</u>			
C0139 Perform leak classification	76	76	5.60	4.55	18
C0142 Perform manifold fitting leak checks	53	58	3.70	4.51	18
C0143 Perform manifold leak tests	61	66	3.88	4.58	18
D0170 Inspect cavity drain systems	48	51	2.81	4.22	17
F0334 Test boost pumps	49	49	1.67	4.62	14
F0341 Test fuel level control valves	43	42	1.51	4.92	14
M0541 Don or doff chemical warfare personal protective clothing	32	38	3.47	4.18	15

Mean TE Rating is 2.10, Standard Deviation is 1.46 (HIGH TE= 3.56)
Mean TD Rating is 5.00, Standard Deviation is 1.00 (HIGH TD= 6.00)



Job Satisfaction Indicators (AFSC 2A6X4 vs. Comparative Sample)



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	1-48 Months		49-96 Months		97+ Months	
	2003 2A6X4 (N=382)	Comp Sample* (N=269)	2003 2A6X4 (N=156)	Comp Sample* (N=133)	2003 2A6X4 (N=293)	Comp Sample* (N=215)
Job interesting	65	64	62	65	69	70
Talents well utilized	77	79	89	85	90	86
Training well utilized	95	87	95	88	92	84
Sense of accomplishment	71	64	67	65	71	73
Plan to reenlist	53	48	72	62	62	60

* Comparative sample of AFSCs surveyed in the last 12 months includes: 2A6X1B



Job Satisfaction Indicators (Current vs. Previous Study)



AETC

	1-48 Months		49-96 Months		97+ Months	
	2003 (N=382)	2001 (N=366)	2003 (N=156)	2001 (N=198)	2003 (N=293)	2001 (N=400)
Job interesting	65	53	62	51	69	71
Talents well utilized	77	71	88	75	90	88
Training well utilized	95	92	95	89	92	87
Sense of accomplishment	71	62	67	56	71	68
Plan to reenlist	53	42	72	57	62	67



Job Satisfaction Indicators (AD) (Across Specialty Jobs)



	Fuel Systems Tech Cluster (N=1,178)	Fuel Systems Tech Job (N=1,046)	Entry-Level Job (N=18)	U-2 Entry- Level Job (N=6)
Job interesting	72	72	73	83
Talents well utilized	86	86	81	83
Training well utilized	94	94	90	100
Sense of accomplishment	75	75	79	83
Plan to reenlist	69	70	64	83



Job Satisfaction Indicators (AD) (Across Specialty Jobs cont.)



	Support Section Independent Job (N=7)	Instructor Independent Job (N=6)	Tank Farm Independent Job (N=5)	Shop/Section Chief Independent Job (N=28)
Job interesting	29	100	60	75
Talents well utilized	71	100	60	90
Training well utilized	86	100	100	89
Sense of accomplishment	71	83	80	79
Plan to reenlist	29	100	100	75



Job Satisfaction Indicators (AD) (Across Specialty Jobs cont.)



	Flight Chief Independent Job (N=15)	Production Superintendent Independent Job (N=6)	Quality Assurance Independent Job (N=5)
Job interesting	93	100	80
Talents well utilized	100	100	100
Training well utilized	93	100	100
Sense of accomplishment	80	83	80
Plan to reenlist	40	67	60



Retention Dimensions

First-Term Airmen (N=368)



	Percent Responding	Average
Planning to Reenlist (N=204)		
Job security	75	2.57
Bonus or special pay	68	2.53
Medical or dental care for AD members	67	2.64
Pay and allowances	65	2.43
Retirement benefits	65	2.66
Planning to Separate (N=164)		
Military lifestyle	60	2.33
Pay and allowances	44	2.19
Location of present assignment	42	2.45
Recognition of efforts	38	2.39
Work schedule	34	2.43

Scale: 1 = slight influence, 2 = moderate influence, 3 = strong influence



Retention Dimensions

Second-Term Airmen (N=155)



	Percent Responding	Average
Planning to Reenlist (N=112)		
Job security	65	2.66
Medical or dental care for AD members	58	2.45
Pay and allowances	58	2.45
Retirement benefits	56	2.65
Bonus or special pay	54	2.53
Planning to Separate (N=41)		
Military lifestyle	63	2.19
Recognition of efforts	56	2.43
Pay and allowances	46	2.37
Esprit de corps/morale	41	2.12
Number/duration of TDYs or deployments	41	2.76

Scale: 1 = slight influence, 2 = moderate influence, 3 = strong influence



Retention Dimensions Career Airmen (N=204)



	Percent Responding	Average
Planning to Reenlist (N=182)		
Retirement benefits	75	2.74
Job security	61	2.51
Pay and allowances	55	2.60
Medical/dental care for AD member	54	2.70
Military lifestyle	50	2.30
Planning to Separate (N=22)		
Military lifestyle	59	1.82
Unit manning	45	2.40
Civilian job opportunities	45	2.60
Pay and allowances	41	2.67
Esprit de corps/morale	41	2.33

Scale: 1 = slight influence, 2 = moderate influence, 3 = strong influence



Summary of Results



- Career ladder progression typical
 - Highly technical at 3-skill level progressing to more managerial at 7-skill level and beyond
- Career ladder documents well-supported by survey data
 - STS and POI provide comprehensive coverage of work performed by career ladder
 - Review of some items warranted
- Job satisfaction indicators
 - Similar when compared to previous study across all TAFMS groups
 - Higher in the areas of expressed job interest, perceived utilization of talents and sense of accomplishment when compared to similar AFSCs



Way Ahead



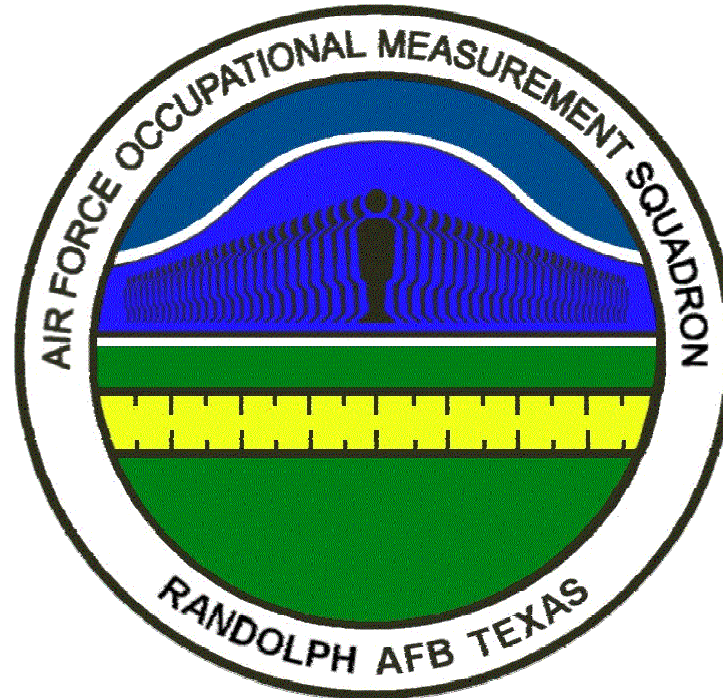
- OSR Delivery Trip - scheduled for Aug 03
- Utilization and Training Workshop (U&TW) – Held May 03 at Sheppard AFB
 - Training Extract presented
- Next SKT rewrite (major) - scheduled for 13 Aug 03



Questions?



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Sustaining the Combat Capability of America's Air Force



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